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The relationship of environment and the developmental process of the beginning school child was explored. More specifically, the objectives of this research were to describe the major dimension through which environment is likely to inhibit development and to specify the areas that have been most influenced by unfavorable environmental circumstances.

Over 100 identifiable variables concerned with such factors as home background, language functionning, intelligence test performance, reading, and general orientation were assessed. The population studied included a core sample of 292 children with a relatively well-balanced sample of Negro and white, lower- and middle-class children.

One of the major implications which arose concerned the importance of "cumulative deficit phenomenon" which takes place between the first and fifth grades. The data indicated that being lower-class and/or Negro contributes to lower language scores. It would appear that four years of a school experience added on to a poor environmental background, plus minority status, produces children who are less capable of handling standard intellectual and linguistic tasks. It might be postualted that when a Negro child broadens his environmental contacts by going to school, he is made more aware of his inferior class status, and this has a depressing effect on his classroom performance.

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The Role of Social Class in Language Development and Cognition

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The Role of Social Class in Language Development and Cognition[1,2]

Martin Deutsch

In a sense, probably no child has ever had a maximally fostering environment, where, within neuro-developmental limits on intellectual growth, individuals have been appropriately stimulated so that they reach at each level their developmental ceilings. But the absence of such an environment and the presence of varying examples of the converse, makes it possible to study the permutations in the interaction of environment with development.

The particular area of research on which we have been focusing at the Institute for Developmental Studies has as one of its objectives the delineation of the major dimensions through which environment is likely to operate in a manner inhibiting development. Another objective is to attempt to specify the cognitive areas that have been most influenced by unfavorable environmental circumstances. As we learn about the typology of cognitive and language deficiencies, we also learn something more about human learning and evolve methods that might be effective in facilitating development.

The delineation of the area of concern in this way reflects a basic thesis that human potential is not being nearly fully exploited by the available educational structures, and that the possibilities

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[1]This is a somewhat revised version of a paper read at the Annual Meeting of the American Orthopsychiatric Association, April, 1964, Chicago, Illinois.

[2]I should like to express appreciation to those of the Institute for Developmental Studies staff who worked on the Verbal Survey, and especially to Vera John, Martin Whiteman, Bert Brown, Cynthia Deutsch, and Barry Karp.

for development are most especially being neglected with regard to what Harrington has termed "The Other America."

Our attack on this problem has included an initial attempt to make a micro-analysis of the environment. This encompasses such molar data as the traditional information on the social structure of the family, communication, economic circumstances, the educational histories of the family members, their child-rearing practices, dominance-passivity patterns, sex role determinations, and the like. The attempt has also been made to analyze the activity structure of the home, the quality of interaction between adults and children, and the whole matrix of behavioral expectations, in terms of both immediate behavior and long-range educational and general goal aspirations. A special but as yet inadequate study and analysis has been made of the conversational opportunities and conversational patterns in the adult-child interactions.

Simply obtaining relationships between social class or ethnic attributes and intelligence or other singular factors has been historically useful, but inadequate in telling us how the structure of experience as mediated through particular environments influences the patterning of cognitive processes. One of the reasons for this inadequacy has been the poor definition of the measured variables. For example, intellective functioning is far broader than what is subsumed under IQ, and in differing social classes, adequate performance might well depend on responses that are not at all tapped by the usual tests. In addition, the nature of the interpenetration of environment and intellectual processes probably differs at various age levels.

What we are attempting to do in this series of studies is to identify patterns in the context of background variables at two developmental stages. The purpose is to define these patterns so that eventual compensatory action can be planned based on empirical evidence.

The first data are now emerging from a four-year study, called the "Verbal Survey."

The data we have and our tentative interpretations of them have led us further to explore the gross and the fine aspects of family interaction in both lower-class socially deprived and middle-class groups. While areas appear that should have been studied with greater intensity and for which a much finer analysis will be required, we can make some postulations about the language environments in these homes. For example, in regard to the lower-class home, there tends to be less dinner-time conversation, as meals are less likely to be regularly scheduled family affairs. There is a paucity of other organized family activities as well in a large number of lower-class homes. Current data indicate that children from fatherless homes have significantly lower IQ scores by the time tney get to the fifth grade than do children who come from intact homes. In a recent paper (Deutsch and Brown, 1964), we hypothesized that this finding was a consequence not so much of the absence of the father, as it was of a diminution of organized family activity. As a result, there would be less conversation and less externally guided individuation of the socialization process.

When specific findings such as these are analyzed, and when the social background data in general are examined, the conclusion arrived

at is that the most impoverished area of activity of these impoverished families was that of language feedback in adult-child interactions.

In the cognitive style of the lower-class family, as Bernstein (1960) points out, language is used in a convergent or restrictive fashion rather than in a divergent elaborative fashion. An exclamation or an imperative or a partial sentence frequently replaces a complete sentence or an explanation. In other words, if a child asks for something, the response is too frequently "yes," "no," "go away," "later," or simply a nod. The feedback is not such that it gives the child the articulated verbal parameters that allow him to start and fully develop normative labeling and identification of the environment.

The actual empirical evidence that we now have is not sufficient to verify Bernstein's formulation. But all of it is in that direction, and when one examines the language difficulties of many of these children, retrospective analysis leads also to these conclusions about the clustering of causal factors.

Prior research of other investigators similarly is not in contradiction with such a formulation. On the one hand, there is the Dennis (1960) information from Tehran, where very much neglected children were found not to start to walk or talk until three or four years of age. On the other hand, there is the work of Skodak and Skeels and their associates (1949) which shows amazing improvement in cognitive functioning when previously neglected young children and infants are given even a modicum of attention and environmental interaction possibilities. The impressive array of studies referred to by Fowler (1962) further emphasizes the quantity of scientific evidence as to

the nearly isomorphic influence of verbally mediated environmental modifiers on developmental processes.

To become specific, the data to be referred to here come from the previously identified research project called the "Verbal Survey." The population studied included a core sample of 292 children and an extended population of about 2500 children of various racial and social class groupings. In this study, we assessed over 100 identifiable variables concerned with home background, language functioning, conceptual behavior, intelligence test performance, reading, general orientation, self-systems, various sub-components of language, and assorted related factors. This paper will make reference--but by no means exhaustively--to only 52 of these variables, concerned with a range of cognitive functions and a few demographic measures, but with language variables at the core.

Unfortunately, the study was not longitudinal but cross-sectional, and almost all the data are for first and fifth grade children only. More recently, we have been accumulating parallel data on pre-school and kindergarten children, but these have not yet been integrated or very closely related to the prior information on the older children. Negro and white, lower- and middle-class children were included in a relatively well-balanced sample.

In general, we have found that, as compared with middle-class children, lower-class children, Negro and white, are subject to what we've labeled a "cumulative deficit phenomenon," which takes place between the first and the fifth grade years. This phenomenon seems to be more pronounced for Negro children than for white, but for

both groups the direction is generally the same. In a caste society it is very difficult to control for socio-economic status, and it is possible that some of the Negro child's measured increasing deficit stems artificially from this incomplete control. At the same time, inferior caste must imprint itself on the child at an early age, and is a constant presence in the environment.

Though there are significant socio-economic and race differences seen in measured variables at the first grade level, it is important to note that they become more marked as the child progresses through school. While we can accept that some of this cumulative deficiency is associated with inadequate early preparation because of corresponding environmental deficiencies, the adequacy of the school environment must also be questioned: in a model system, as a child goes through the educational system, one should expect linearity in cognitive growth.

If we again look at all the studies of the sensitivity of the organism to the environment, and if this critical sensitivity still maintains itself past the first grade and through the elementary school years, a good deal of the responsibility for the high reading retardation levels, and the poor verbal skills of these disadvantaged children, must be placed on society's major public socializing institution, the school.

This was the major reason for the initiation of the study referred to: to attempt to formulate a nomenclature of cognitive debilities, and to attempt to use both the systematization and the underlying information as bases for structuring an appropriate and stimulating

curriculum. The attempt is not simply to demonstrate the existence of differences, but to define both anomalies and orderliness in perceptual, linguistic, and conceptual processes and school achievement.

In these efforts, emphasis was placed on language not only because it is the primary avenue for communication, absorption (or, in Piaget's terms, assimilation--though for him this is more than a language process), and interpretation of the environment; but because it also reflects highly acculturated styles of thought and ideational modes for solving and not solving problems.

While there are differing opinions and theories about the exact relation of language to cognitive processes, there is considerable consensus that a close relationship exists. Theories run from Whorf, who was a linguistic determinist, through Piaget, for whom language is essential but not crucial, to such experimenters as the Kendlers, who look on verbal mediation in problem solving as an emergent factor built on earlier modes. Jensen regards verbal mediation as facilitating in some learning situations, and not in others. In all, however, it seems reasonable to conclude that as we study the influences on qualitative variables in language and language development, we are also studying the effects of the same influences on cognitive development and problem-solving styles and abilities. Bruner says it well in discussing the interactionist position of Vygotsky in his introduction to Vygotsky's book Thought and Language (1962):

> For it is the internalization of overt action that makes thought, and particularly the internalization of external dialogue that brings the powerful tool of language to bear on the stream

> of thought. Man, if you will, is shaped by the tools and instruments he comes to use, and neither the mind nor the hand alone can amount to much . . . .

Vygotsky's concept of external dialogue is an example of a genetic theory of the thought process in which the impact of the social environment is taken into account. The actual process by which patterns of verbal interaction in the child's environment become internalized and contribute to his cognitive development remains hypothetical. But strong evidence can be adduced to support the assumption previously expressed that it is the active verbal engagement of people who surround him which is the operative influence in the child's language development. The structuring of these verbal engagements in terms of the family's conditions and style of life, and the further relationship between style of life and social class membership leads to the analysis of children's language skills and verbal behavior in terms of their families' socio-economic status. As previously indicated, we have collected such data on a balanced sample of children at two age levels, and it is some of the analysis and interpretation of a portion of these data which will now be discussed.

The entire correlational matrices will not be reproduced here. Rather, the over-all patterning of results will be examined in terms of social class, race, and developmental levels as more-or-less independent variables. Considered as significant will be only those correlations which are significant at the .01 level or better. For the size of the current samples, this means including correlations of .21 or higher. These are shown in Table 1. Definition of each of

the variables is listed in Table 2.

Insert Tables 1 and 2 about here

On the first-grade level, lower social class status is associated with poorer performance on all the IQ scores: the Lorge-Thorndike, the WISC vocabulary test, and the Peabody Picture Vocabulary Test; the three scores on a Verbal Identification Test which have to do with a more abstract conceptualization of a visual stimulus; several rhyming, fluency, and verbal explanation scores on a Verbal Fluency and a Concept Sorting Test; scores on a Cloze Test; and a score reflecting general environmental orientation. (Variables 8, 9, 10, 11, 12, 13, 18, 19, 20, 21, 22, 25, 35, 39, 40, 41, 43, 47, 50, 51, 52).

If for the first grade subjects we examine the variables which correlate significantly with both SES and race, there are only two in addition to those which correlated only with SES. These are one verbalization score on the Concept Formation Test, and scores on the Wepman test of auditory discrimination (Variables 35, 47).

There are only six variables which relate to race but not SES; these are three enumeration scores on the Verbal Identification Test, two scores relating to the inclusiveness of grouping on the Concept Sorting Test, and a verbalization score on the Concept Formation Test. (Variables 15, 16, 17, 23, 26, 27). The tasks on the Verbal Identification Test involved labeling and are measures highly reflective of experience and the specific availability of labels, whereas the Concept Sorting Test required a knowledge of categories including

occupations, transportation, housing, and animals.

It might be noted that all the significant relationships were between poorer performance and lower-class status. The race differences are present and are in the direction of poorer performance by Negro children, but they are reflected in only 8 of the possible 43 comparisons for the first grade group.

It is important to note that the correlation with the Wepman auditory discrimination test is associated with both SES and race. What might be operative here is the presence of dialect variations in the Negro group, influencing and limiting the communication possibilities in school, and possibly having direct relevance to the three enumeration scores that are associated only with race, as there may be a general contamination here of comprehension.

On examining similar relationships for the fifth grade group, we find that all the IQ measures now no longer relate just to SES but also to race. Still relating only to SES are two gestalt scores involving abstract categorization of visual stimuli, and the scores on the Cloze Test, which are associated with the manipulation and syntactical control of language. Additional variables associated with SES for the fifth grade sample are a Form-Class score on the Word Association Test, also probably associated with syntax and logical sequence; a perceptual similarities score on a Concept Formation Test; and a score on a Concept Sorting Test which reflects the adequacy of categorizing visual stimuli (Variables 48, 29, 26). The final variable which relates to SES is the reading score (Variable 14)--a score which at the time of the Survey could not be obtained for the first grade group. We are now completing

the standardization of a Reading Prognosis Test for kindergarten and first grade children, and are collecting data which will be parallel to those reported here for fifth grade children.

For the fifth grade sample, there are 12 variables which are related to both SES and race, as opposed to three variables for first graders. What happens in terms of specific measures is that the Wepman correlation drops, no doubt for developmental reasons; the other two measures--both verbalization scores--remain and are joined by 10 additional variables, none of which was associated with race for the first grade sample, but all of which were associated with SES. These 10 measures include all the IQ scores, two verbal fluency measures, and the general orientation score (Variables 8, 9, 10, 11, 12, 13, 39, 40, 43). What this seems to indicate is that the deficit associated with lower SES status on these measures is joined by a deficit associated with race. A more exact breakdown of these shifts is currently underway by means of partial correlations and analyses of variance.

The variables for the fifth grade sample associated with race but not SES include the same three enumeration scores as were found for the first graders, but do not include the two categorization scores found at the first grade level. However, a word knowledge and a sentence fluency score have been added to this category, and, very interestingly, a latency score has also been added (Variables 38, 41, 49). This last is consistent with some other data on expressive language behavior (Deutsch, Maliver et al, 1964), and might indicate a hesitation phenomenon among Negro children when handling language material. It could also reflect a different temporal expectation in

verbal interchange, and this might be a fruitful hypothesis to investigate.

Over-all, of 42 measures for the first grade sample, six correlated significantly with race alone, 19 with SES alone, and two with both. Of 43 scores for the fifth grade sample, 6 correlated with race alone, 10 with SES alone, and 12 with both. This means that significant correlations with race were found in 8 comparisons for the first graders, and in 18 for the fifth grade sample. The number of significant comparisons on SES for each group was 22. Also, for each group 15 measures were related to neither race nor SES. There was great overlap between the groups on these non-discriminating measures, and they tended to be the more concrete ones. (First Grade: Variables 7, 24, 27, 28, 29, 30, 31, 32, 33, 34, 36, 38, 42, 48, 49. Fifth Grade: Variables 19, 23, 24, 25, 27, 28, 30, 31, 32, 33, 34, 42, 44, 45, 46, 47.)

If we now look for the functions underlying measures for which race is associated with poor performance, they are found in areas of abstraction, verbalization, and experientially dependent enumeration. It should be emphasized, however, that not all measures reflecting these functions related to race.

In a recent paper by John (1963) reporting on work done at the Institute, she suggests that the middle-class child has an advantage over the lower-class child in the amount of tutoring and help available to him in his home. She emphasizes that without such help it is very difficult for a child to acquire the more abstract and precise use of language. Indeed, in the data just discussed, what is found is a deficiency based on class and race in the measures which reflect

abstract and categorical use of language, as opposed to denotative and labeling usage.

If the tri-partite language ordering that we have used in formulating measures for our research is applied, it is found that as the complexity of the levels increases, from labeling, through relating, to categorizing, the negative effects of social disadvantage are enhanced. It is also true, in looking at the enumeration scores, that as labeling requirements become more complex and related to more diverse and variegated experience, lower-class people with more restricted experience are going to have more difficulty in supplying the correct labels. In Hunt's terms (1961), there is an inappropriate "match" between the child's intrinsic development and the external requirements.

In the formulation of Bernstein, the cumulative deficiency in language functioning is the failure in development of an elaborated language system that has accurate grammatical order and logical modifiers, which is mediated through a grammatically complex sentence structure, which has frequent use of prepositions and impersonal pronouns, and a discriminative selection of adjectives and adverbs. These and other characteristics described by Bernstein are those which he feels give direction to the organization of thinking. The elaborated language code is differentiated from what he defines as the restricted language code, which is systematically used largely as the major speech form of the lower class. It is characterized by grammatically simple and often unfinished sentences, poor syntactical form, simple and repetitive use of conjunctions, the inability to hold a formal topic through speech sequences, a rigid and limited

use of adjectives and adverbs, etc. In essence, he is describing a class-based language system that effectively denies the lower-class person the necessary verbal strategies to obtain vertical social mobility. This is probably more true in England, where Bernstein works, with its rigid class-oriented school system, than it is here. But in our society it might be particularly cogent for rural to urban migrants marked by caste factors or by the highly delineated social class factors possessed, for example, by the Appalachian whites. In our society, if school is to be effective and these youngsters are not to be discharged into that very large group of unskilled unemployables, then mediating, expressive, and receptive language training should be a conscious part of curriculum organization. You just can not become a computer technologist unless you can read the instructions and utilize the necessary mechanisms for symbolization and concept attainment. And for this you must have available an elaborated language system with appropriate mediators.

What makes the implications of the findings reported so significant is their apparent contribution to the cumulative deficit hypothesis. Also, they provide insight into the nature of the cumulative deficit. Essentially, it would appear that when one adds four years of a school experience to a poor environment, plus minority group status, what emerge are children who are apparently less capable of handling standard intellective and linguistic tasks. One might also postulate that when the Negro child broadens his environmental contacts by going to school--and to and from school--he is made more aware of his inferior caste status,and this has the same depressing

effect on his performance that his inferior class status had all along. The data indicate that being lower-class, Negro or white, makes for lower language scores; being Negro makes for lower scores; but being both lower-class and Negro does not disproportionately make for lower language scores.

As indicated, these children have poorer capabilities in handling syntax. I would suggest that they are aware of their grammatical ineptness, and this leads to a reticence and a hesitancy to communicate across social class lines. This would mean that speech, as Luria conceives of it--as a single complex leading to changes in the stimulus field--is not operative for these children in the school situation. If language cannot be used as an elaborating form of communication, school loses much of its socializing and teaching capabilities, regardless of the curriculum content. As a consequence, for a significant proportion of these children, functional motivation may not exist in terms of the learning strategies demanded by the school situation. As a result, the negative properties associated with lower-class and minority group status tend to become reinforced, and for these children, language becomes an effective tool only when it has adequate feedback properties in communicating with peers or others who share the particular subculture. In other words, it becomes intra-class contained. The breakdown in communication here is probably a major operative variable which leads for example to the high dropout rate: the student is no longer in communication with anything that is meaningful to him in the school. When teachers report they are frustrated with the learning attitudes and potentials of many of the disadvantaged children, they

are responding objectively to a reality condition that, through their expectations, they have helped to produce.

It would seem that in the long run the most effective remedial and enrichment programming would have to follow developmental stages, and curriculum change should be introduced at the earliest possible time in the school experience in order to arrest the cumulative deficit, for as development goes on in the individual child, it probably is progressively more difficult to reverse the deficit, as there is more of it.

In a sense, we still know a minimum of what the school does and does not do to the child. The exciting aspect is that with more specific knowledge of developmental processes, and of the influences of environmental factors and of special stimulating conditions on them, it should be possible to program stimulation in increasingly less amorphous ways and with methods that are appropriate to basic learning capabilities, so as to vitiate the effects of unfavorable environments.

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Table 1

Comparisons between First and Fifth Grade Verbal Survey Samples:
Significant Correlations with Race and SES*

Variables	Correlations with Race		Correlations with SES	
	First Grade (N=127)	Fifth Grade (N=165)	First Grade (N=127)	Fifth Grade (N=165)
7--Age in months	XX	XX	XX	-.21*
8--L-T IQ Score	XX	-.36	.42	.38
9--L-T subtest #1	XX	-.34	.35	.25
10--L-T subtest #2	XX	-.30	.26	.32
11--L-T subtest #3	XX	-.30	.26	.38
12--L-T raw score	XX	-.35	.34	.37
13--WISC Vocab. score	XX	-.31	.22	.49
14--Gates score	XX	XX	(test not given)	.44
15--Verbal Ident., noun enumer. score	-.25	-.28	XX	XX
16--Verbal Ident., action enumer. score	-.28	-.20	XX	XX
17--Verbal Ident., combined enumer. score	-.27	-.27	XX	XX
18--Verbal Ident., noun gestalt score	XX	XX	.33	.24
19--Verbal Ident., action gestalt score	XX	XX	.24	XX
20--Verbal Ident., combined gestalt score	XX	XX	.32	.27
21--PPVT raw score	XX	XX	.32	(test not given)
22--PPVT IQ	XX	XX	.33	(test not given)
23--Concept Sort., # piles score	.21	XX	XX	XX
25--Concept Sort., verbal score	XX	XX	.23	XX
26--Concept Sort., verbal score/# piles (ratio)	-.21	XX	XX	.23
29--Concept Form., percept. similarities scores	XX	XX	XX	.22
35--Concept Form., verbaliz. score, class specificity	-.25	-.36	.26	.20

* Only correlations significant at $p < .01$ are shown (XX=N.S.)

(Table continued on next page)

(Table 1 continued)

Comparisons between First and Fifth Grade Verbal Survey Samples:
Significant Correlations with Race and SES

Variables	Correlations with Race		Correlations with SES	
	First Grade (N=127)	Fifth Grade (N=165)	First Grade (N=127)	Fifth Grade (N=165)
36--Concept Form., verbaliz. score, class generaliz.	XX	-.24	XX	.21
37--Concept Form., total verbaliz. s e	-.24	-.32	XX	.21
38--Word Knowledge score (Verbal Fluency)	XX	-.24	XX	XX
39--Verbal Fluency, all rhymes score	XX	-.20	.24	.28
40--Verbal Fluency, meaningful rhymes	XX	-.24	.28	.33
41--Verbal Fluency, sentence fluency	XX	-.20	.25	XX
43--Orientation Scale	XX	-.30	.36	.51
47--Wepman test of auditory discrimination	.24	XX	-.24	XX
48--Word Assoc., form class score	XX	XX	XX	.27
49--Word Assoc., latency score	XX	..35	XX	XX
50--Cloze test, grammatical score	XX	XX	.26	.33
51--Cloze test, correct score	XX	XX	.25	.33
52--Cloze test, popular score	XX	XX	.30	.37

Table 2

Brief Description of Verbal Survey Test Measures
Showing Significant Differences
by Race and SES Groups

Variable Number	Identification
7	S's Age in Months at Time of Lorge-Thorndike Testing
8	Lorge-Thorndike I.Q. Score
13	WISC Vocabulary Score
14	Gates Reading Score
	Verbal Identification Test - The child is shown twenty simple drawings, one at a time, and given a set to enumerate the objects in the pictures. The child is then shown the twenty pictures a second time and asked to give the one word that best describes each picture
15	Noun Enumeration Score - The number of items identified correctly on those stimulus cards best described by a noun, e.g., kitchen.
16	Action Enumeration Score - The number of items identified correctly on those stimulus cards best described by a verb, e.g., saluting.
17	Combined Enumeration Score - 15 + 16 - All the items identified correctly on the stimulus cards of the Verbal Identification test.
18	Noun Gestalt Score - The measure of the child's ability to describe a scene with a single word when the scene is best described by a noun.
19	Action Gestalt Score - The measure of the child's ability to describe a scene with a single word when the scene is best described by a verb.

Variable Number	Identification
20	Combined Gestalt Score - 18 + 19 - The measure of the child's ability to describe the scenes of the Verbal Identification test with a single word.
21	Peabody Picture Vocabulary Test (PPVT) Raw Score - The number of words tried minus the number incorrect.
22	PPVT I.Q. Score - Obtained from the appropriate tables in the PPVT manual.
	Concept Sorting Test - The child is presented sixteen cards in random order (four each representing: modes of transportation, housing, occupations and animals) and asked to sort the cards into piles. He is also asked to explain his grouping.
23	Number of Piles Score - The exact number of piles sorted. Four would be best. Usually anything above four indicates inadequacy at the task. This number has been primarily intended as a denominator for the other scores.
24	Sort Score - This score reflects the implicit quality of the child's sorting, e.g., sorting by class generalization receives more credit than functional pairings. The higher the score the better the quality.
25	Verbalization Score - For this score the child is asked to explain the basis of his sorting procedure. The basis of his sorting is evaluated and scored. Higher forms of classification, e.g., generalization vs. functional pairing get higher scores.
26	25/23 = Verbal Score Ratio
27	24/23 = Sort Score Ratio

Variable Number	Identification
34	Verbalization Score, Perceptual Similarity Items - The evaluation of the child's expressed reason for putting together items when the basis of matching is perceptual similarity.
35	Verbalization Score, Class Specificity Items - The evaluation of the child's expressed reason for matching items when the intended basis for matching is class specificity.
36	Verbalization Score, Class Generality Items - The evaluation of the child's expressed reason for matching items when the intended basis for matching is class generality.
37	Total Verbalization Score - 33 + 34 + 35 + 36.
	Verbal Fluency Test
38	Word Knowledge Score - The number of words the child can say in forty-five seconds.
39	All Rhymes Score - Total number of rhymes given (whether or not a response is a meaningful word) in response to specific stimuli.
40	Meaningful Rhymes Score - Total number of meaningful rhymes given by child in response to specific stimuli.
41	Sentence Fluency Score - The child is requested to make sentences using first one word, then the original word plus a second stimulus, and finally a sentence containing the first two stimuli plus a third. The sentences are evaluated for quality and organization.
42	Difference Score - All rhymes minus meaningful rhymes (39 - 40).

Variable Number	Identification
	Concept Formation Test - The child is presented with a booklet consisting of pictures representing concepts of identity, similarity, class specificity (persons or animals), and class generalization (living things). He is instructed to choose stimuli which belong together and to give a verbal explanation for the grouping.
28	Perceptual Identification Score - The number of correctly matched items when the intended basis for matching is perceptual identity, e.g., the same dog.
29	Perceptual Similarity Score - The number of correctly matched items when the intended basis for matching is perceptual similarity, e.g., a collie with terriers.
30	Class Specificity Score - The number of items correctly matched when the intended basis for matching is that the items belong to the same class, e.g., a dog and a horse are both animals.
31	Class Generality Score - The number of items correctly matched when the items to be matched belong to different classes which are sub-classes of a more general category, e.g., a dog and a rose are both living things.
32	Total Choice Score - The total number of items matched correctly - 28 + 29 + 30 + 31.
33	Verbalization Score, Perceptual Identification Items - The Verbalization Score is the evaluation of the child's expressed reason for putting two items together, with higher levels of generalization getting higher scores. This is the verbalization score for those items where the basis for matching is perceptual identity.